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AMENDMENTS TO THE SPECIFICATION

On page 2, please replace the paragraph starting at line 1 with the following:

Grating-assisted directional couplers (GADCs) are fundamental guided-wave components in some distributed feedback lasers, distributed Bragg reflector lasers, optical wavelength filters and wavelength division multiplexing devices. A typical known GADC is shown in the accompanying FIG. 1, and consists of two waveguides, a (with height h_a and refractive index n_a) and b (with height h_b and refractive index n_b), a grating region (with height H), and a separation layer (with height h_1 and refractive index n_1). The purpose of this coupler is to enable power transfer from one waveguide to the other, over a minimum grating length (L) and with maximum efficiency. The grating enables matching between propagation constants of two interacting waveguide modes that exchange optical power. However, if the overlap of the two optical fields in the structure without the grating present is very poor, introduction of the grating will not improve the coupling efficiency significantly.

On page 2, please replace the paragraph starting at line 15 with the following:

To couple optical power from an optical fibre (with refractive index n_0) to a thin semiconductor layer (with refractive index n_a), without the aid of any additional optical element, the power must be coupled first to the thick upper waveguide with refractive index very close to the refractive index of the fibre (waveguide b in FIG. 1) in order to achieve very small insertion loss. From this waveguide power is coupled to the thin semiconductor waveguide (waveguide a in FIG. 1). The large difference between these two waveguides in both thickness and refractive index makes the task very difficult to solve.

On page 7, please replace the paragraph starting at line 8 with the following:

Light from input waveguide layer 10 is coupled to the intermediate waveguide 30 using the first grating 31, and subsequently to the output semiconductor waveguide layer 20 using the second grating 32. Coupling lengths (L_1 and L_2, respectively, in Figure 5) and/or periods (Λ_1 and Λ_2, respectively, in Figure 5) and/or depths and/or duty cycles generally are different for the two gratings. The profile of the grating is usually rectangular, but other grating profiles may be used. The refractive index of intermediate waveguide layer 30 generally must be larger than that of

input waveguide layer 10, but less than the refractive index of the output waveguide layer 20. The intermediate waveguide layer 30 is crucial for the operation of the coupler device, because it enables highly efficient coupling occurring at both gratings, consequently forming an efficient DGADC. Layer 41 below the other layers serves for isolation from a substrate 40, strongly reducing radiation losses.